

Stenting the descending aorta during repair of type A dissection: Technology looking for an application?

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In this issue of the *Journal*, Uchida and colleagues¹ provide important data on emerging technology in the field of endoluminal treatment of aortic disease. They report an elegant hybrid technique for repair of acute type A aortic dissection. The authors use the traditional open surgical method for identification and resection of the inciting intimal tear and complete the procedure with stent deployment into the descending aorta under direct, open visualization. They hope that the effort expended to stent the descending aorta at the time of the original operation will translate into benefit in the long term. They anticipate that such endovascular treatment will favorably alter the fate of the remaining dissected descending aorta and, in so doing, decrease future complications and need for reoperation.

We are glad to see that it is our surgical colleagues who are pioneering this new technology. These same authors generated an early report on this topic² and should be commended on their continuing effort to provide us with current, relevant data. In this issue they report additional follow-up information, further documenting their evolving experience.

The authors' rationale for adding endovascular stenting (to an already successfully proven open surgical procedure) is based primarily on two suppositions. They suggest, first, that the remaining dissected descending aorta will lead to considerable future complications in terms of aneurysm formation, expansion, and rupture. Their second suggestion is that endovascular therapy will cause thrombosis of the false channel, promote healing of the remaining dissected aorta, and thereby prevent future descending aortic complications. Within the study, the authors present data thoroughly documenting achievement of their desired outcome: false channel thrombosis. Though intuitively it may seem that addition of the described endovascular procedure to promote false channel thrombosis will be beneficial, as suggested by the authors, it is not clear that all data support this.

After traditional replacement of the ascending aorta for acute type A aortic dissection, is the residual dissection in the descending aorta really a problem? For the purposes of this editorial, we interrogated our database at the Yale Center for Thoracic Aortic Disease. We identified 200 acute ascending aortic dissections treated and followed long term at our facility. In these cases the descending aorta grew only 0.28 cm per year. Since the descending aorta is usually of normal caliber in these patients, this would imply that a decade or more would be necessary to reach a dangerous descending aortic diameter of 5 to 6 cm. A decade is an eternity for these patients. In fact, among these 200 acute type A dissections, we needed to operate, in long-term follow-up, on only 4 patients (2%) for dilatation of the descending thoracic aorta. This information argues strongly that the descending aorta behaves in quite a benign fashion after conventional aortic replacement for acute type A aortic dissection. Thus the authors' technique may be fixing something that is not really "broken."

This information is consonant with the documented benignity of the dissected descending aorta after recovery from acute type B dissection. In a recent publication from our institution, the fate of 100 patients with acute type B aortic dissection was documented over a 10-year period. In this long-term follow-up, the need for late surgical replacement of the aorta for aneurysmal dilation was uncommon.³

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Various studies have also documented the natural course of the dissected descending aorta after type A dissection. Sabik and associates,⁴ examining follow-up of over 200 patients with repaired type A dissection, concluded that “residual distal dissected aorta does not decrease late survival and has a low risk of aneurysmal change and reoperation for at least 10 years.” They emphasized the importance of ensuring that the entire intimal tear is resected at the time of the original procedure, even if arch replacement is required to achieve this. Crawford and associates⁵ drew similar conclusions based on a 20-year follow-up of 82 patients: “Seventy percent of surviving patients with DeBakey type I dissection were free of a second aortic operation for aneurysmal dilation of the distal false channel, but this occurred in none of nine patients in whom an intimal tear in the transverse arch was included in the resection.”

Is it likely that stenting the descending aorta can prevent complications of the dissected descending aorta? It is important to note that stent treatment of aneurysms, as a general modality, has yielded very discouraging midterm results. This can be seen in the reports of the EUROSTAR experience, which found “excellent early results but poor durability”⁶ with late rupture noted⁷ and expressed “cause for concern with regard to broad application of endovascular repair.”⁶ In other studies as well, early experience with endovascular treatment of abdominal and thoracic aortic aneurysms appeared promising, but as midterm follow-up data are coming to light, extremely disappointing evidence is accumulating—with graft dislodgment, aneurysm expansion, and failure to prevent rupture. In the just published EVAR 2 trial,* stent techniques did not improve survival over the “no intervention” group.⁸ In the case of prophylactic stent treatment for acute descending aortic dissection, the early results of the INSTEAD trial† are also very discouraging, with *higher* mortality in the stent-treated group.^{9,10}

Therefore, Uchida and colleagues are to be congratulated for their excellent clinical results and for investigating the clinical application of their hybrid surgical/stenting procedure. However, we must not lose sight that job #1 with acute type A aortic dissection is to produce a live patient.¹¹ Conventional resectional procedures achieve this. We cannot, at this time, recommend general application of the hybrid technique, with its incremental complexity in an already challenging situation. Furthermore, the residual dis-

section in the descending aorta does not seem to be quite as serious as the authors fear. Also, there appears to be little objective evidence that placement of a stent in the descending aorta will improve the relatively benign natural outlook of that segment of the vascular tree.

Panos and associates¹² reported experience with a similar hybrid surgery/endovascular technique for acute type A aortic dissection. They maintain excellent balance in their discussion, observing that “. . . one may argue the value of this procedure, which serves a prophylactic treatment while adding a supplementary risk to an already complex procedure with a high mortality rate.” We agree.

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*EVAR = Endovascular Aneurysm Repair.

†INSTEAD = Investigation of STent grafts in type B Aortic Dissection.